

Appendix 6. Glossary of Commonly Used Epidemiologic Terms

Following is a list and definitions of commonly used epidemiologic terms.¹ Note: the numbers given in the examples are for illustrative purposes only.

AIDS: Acquired Immunodeficiency Syndrome, the condition caused by HIV (Human Immunodeficiency Virus) infection. In order to be classified as an AIDS case, an individual must be infected with HIV and have at least one of the AIDS-indicator conditions. The Centers for Disease Control and Prevention (CDC) created an AIDS case definition in 1983 for the purpose of statistical monitoring. This definition was revised in 1985, 1987 and again in 1993 as additional scientific information came to be known about HIV infection. A diagnosis of AIDS usually requires:

1. A CD4+ T-lymphocyte count under 200 cells/uL (or less than 14% of total lymphocytes) AND laboratory evidence of HIV infection;
OR
2. Presence of an AIDS-defining indicator disease and the absence of another reason for immune impairment.

Antiretroviral drugs: Refers to drugs or agents that affect the capability of retroviruses such as HIV to reproduce, prescribed for the treatment of retroviral infections such as HIV infection. The common groups of antiretroviral agents for the treatment of HIV infection are: protease inhibitors, nucleoside analogs, nucleotide analogs, non-nucleoside reverse transcriptase inhibitors, and fusion inhibitors.

Case: An instance of a disease that matches the criteria set by a health authority for inclusion in the official disease count.

Case Definition: The criteria defining a disease or condition. One should note that these definitions change and that the change may alter the data collected and the interpretations (for example, the change in the AIDS case definition in 1993).

Co-morbidity: The occurrence of more than one illness, disease, or infection at the same time (e.g. AIDS and Tuberculosis).

¹ Many of the terms and definitions on this list were adapted with permission from the Texas Department of Public Health and the Centers for Disease Control and Prevention and Health Resources and Services Administration. *Integrated Guidelines for Developing Epidemiologic Profiles: HIV Prevention and Ryan White CARE Act Community Planning*. Atlanta, Georgia: Centers for Disease Control and Prevention; January 2003.

Counseling & Testing: In the context of HIV/AIDS surveillance, 'Testing' refers to testing of an individual for HIV infection. This service is generally accompanied by patient 'Counseling' before and after the test regarding the test, test results, interpretation of the test and other related issues. The Massachusetts Department of Public Health AIDS Bureau sponsors numerous Counseling and Testing programs which have services available in "**Anonymous**" (the client is not identified or known to the counselor) as well as "**Confidential**" (the client is known to the counselor) settings.

Count/Number: An amount of something (1600 alive AIDS cases in Boston in 1999).

Cumulative Cases: The total number of cases of a disease reported or diagnosed during a specified time. Cumulative cases can include cases in people who have died.

Demographics: Ways to describe people (race, ethnicity, sex, age); the characteristics of a human population or part of it

Epidemic: An increase above the usual or expected rate of occurrence of particular events in a population.

Epidemiology: The study of the distribution and determinants of health-related events or disease in specified populations.

Exposure: Contact with an infectious agent that is suspected to influence the risk of developing a particular disease.

Exposure Mode: The exposure mode indicates which risk behavior had the highest probability of being the route of infection. For surveillance purposes, HIV infection cases and AIDS cases are counted only once in a hierarchy of exposure modes. The hierarchy was developed by CDC to predict the most likely cause of infection when a person has engaged in multiple risky behaviors. Persons with more than one reported exposure mode to HIV are classified in the exposure mode listed first in the hierarchy, except for men with both a history of sexual contact with other men and injection drug use which comprises a separate exposure mode category. Note that the hierarchy is based on the likelihood of transmission given a single instance of the risk behavior. Any occurrence of the behavior since 1978 counts and the hierarchy has been criticized because how *often* or how *recently* people have put themselves at risk (or been put at risk) are not taken into account. Some exposure modes, such as *Pediatric* and *Blood/Blood Products* are not risk behaviors on the part of the infected individuals.

Following is a description of the Exposure Mode categories in the hierarchical order:

- **MSM (Male to Male Sex):** Includes men who report sexual contact with other men, and men who report sexual contact with both men and women.
- **IDU (Injection Drug Use):** Cases in persons who report injection drug use.
- **MSM/IDU:** Cases in men who report both injection drug use and sexual contact with other men.
- **Heterosexual Sex:** Cases in persons who report specific heterosexual sex with a person with, or at increased risk for, HIV infection (e.g. an injection drug user). The sub-categories for this mode of transmission are listed below.
 - ***Heterosexual Sex w/ an Injection Drug User***
 - ***Heterosexual Sex w/ a person w/ HIV infection or AIDS***
 - ***Heterosexual Sex w/Bisexual male***
 - ***Other Heterosexual Sex:*** Includes all other sub-categories of risk, such as heterosexual contact with a person infected through a blood transfusion.
- **Presumed Heterosexual:** Cases in persons who report heterosexual sex and do not report any other risk but do not report any knowledge of specific risk in their sex partners. Presumed Heterosexual is an exposure mode category used by the Massachusetts HIV/AIDS Surveillance Program. Conversely, the Centers for Disease Control and Prevention (CDC) categorizes these cases as No Identified Risk.
- **Blood / Blood Products:** Cases in persons infected by blood or tissue, such as a blood transfusion or a transplant from an infected donor.
- **Pediatric:** Infection before the age of 13, including mother to child transmission through pregnancy, childbirth or breastfeeding and blood transfusions to children.
- **Occupational:** Cases in persons who were exposed to HIV through occupational risk, such as a needle stick injury.
- **No Identified Risk:** Cases in persons with no reported history of exposure to HIV through any of the listed exposure categories.

Geographic: Having to do with a place (city, county, health service region).

HAART: (Highly Active Anti-Retroviral Therapy): Aggressive anti-HIV treatment which includes a combination of antiretroviral drugs.

HIV: Human Immunodeficiency Virus, the virus that causes **AIDS** (Acquired Immunodeficiency Syndrome).

Immunosuppression or immune deficiency: A state of the body where the immune system defenses do not function normally, thus making a person susceptible to diseases that they would not ordinarily develop; this can be the result of illness or the administration of certain drugs.

Incidence: The number of new cases in a defined population during a specific period, often a year, which can be used to measure disease frequency. It is important to understand the difference between HIV incidence and reported HIV diagnoses. While trends in HIV diagnosis are our best indicator for who is most at risk of HIV infection, HIV surveillance reflects the incidence of diagnoses among people who are in care and not the actual incidence of new infections. Like AIDS diagnoses, HIV diagnoses are not a direct measure of incidence of infection itself. People may be infected with the virus for many years prior to being tested and seeking care, at which point the case is considered a “diagnosis” and reported to the MDPH HIV/AIDS Surveillance Program.

Incidence Rate: The number of new cases in a specific area during a specific period among persons at risk in the same area and during the same period. Incidence rate provides a measure of the effect of illness relative to the size of the population. Incidence rate is calculated by dividing incidence in the specified period by the population in which cases occurred. A multiplier is used to convert the resulting fraction to a number over a common denominator (often 100,000).

Morbidity: The occurrence of an illness, disease, or injury in a population.

Mortality Rate: The rate with which persons within a given population die from a particular disease.

Opportunistic Infections (OI): An illness caused by a microorganism that usually does not cause disease in persons with healthy immune systems, but which may cause serious illness when the immune system is suppressed. Common OI in HIV positive people include *Pneumocystis carinii* pneumonia (PCP), *Mycobacterium avium* complex (MAC) and cytomegalovirus (CMV) infection.

People Living with HIV/AIDS: Includes all people not known to be dead as of a specific date who have ever been diagnosed with HIV infection and/or who have ever been diagnosed with AIDS, regardless of their current clinical status. Additionally, only people who have been reported to the Massachusetts Department of Public Health HIV/AIDS Surveillance Program are included in counts.

Percent Increase or Decrease: The rate of change between one time period and another earlier time period. For example, if 60 AIDS cases were diagnosed in 1992 and 80 were diagnosed in 1995, the calculation looks like this: $80 - 60 =$

20; $20 \div 60 = 0.33$; $0.33 \times 100 = 33\%$. Therefore, the number of cases increased 25% from 1992 to 1995. Here's another example: 50 syphilis cases were reported in 1992, but only 10 were reported in 1995. The calculation looks like this:

$$10 - 50 = -40; -40 / 50 = -.80; -.80 \times 100 = -80\%$$

Therefore, the number of cases decreased 80% from 1992 to 1995. Note that you can have large percentage increases but you can never have a decrease of over 100%.

Percentage Point Change: Example: Yesterday, Jane got 34% of the pie. Today Jane got 35% of the pie. The percentage point change was +1%. (Note that this is different than percent increase or decrease which was 3%.) The percentage point change indicates how much bigger or smaller Jane's *share* of the pie was today compared to yesterday. Note that the example does not say how big the pie was yesterday *or* today. So, unless the actual size of the pie is provided (for example, the pie was a 3-inch pie yesterday but a 9-inch pie today), it cannot be determined if Jane got more or less pie today, only that she got a bigger share of it.

Perinatal Transmission: Generally refers to the transmission of a characteristic or condition from a mother to the child during pregnancy or during childbirth. HIV infection can be transmitted perinatally from an HIV-infected mother to her child.

Prevalence: The total number of cases of a disease in persons not known to have died in a given population at a specific time. Prevalence can be thought of as a snapshot of all existing cases at a specified time. It can provide an estimate of risk for a disease at a specific time. For HIV/AIDS surveillance, prevalence refers to living persons with HIV disease, regardless of time of infection or date of diagnosis.

Proportion, percentage: A share of something. (For example, 20 of 25 cases [80%] reported in 1995 were male). To calculate a proportion/percentage, the size of the total must be known. Also the following principle is key: Joe, Mary, and John share a pie today and a pie tomorrow. If Mary gets a bigger share tomorrow than she did today, and the pie is the same size, then *someone else* (either Joe or John or both of them) is going to get a smaller share tomorrow.

Rate: How often something happens in relation to the population it happens in per unit of time (100 AIDS cases per 100,000 males in Boston in 1995). In order to use rates effectively, you must keep in mind the size of numerator and denominator. The *kind* of data used is also important. For example, AIDS case rates are calculated like this: 25 AIDS cases in the group divided by the *estimated general population* of 400,000 in the group times 100,000 ($25/400,000 \times 100,000 = 6.3$ per 100,000 estimated general population). The hidden assumption here is that AIDS case reporting is fairly complete and that it *does represent* AIDS cases in the general population, that it is "population level" data.

Reporting Delay (or Lag): How much time goes by between the date a person is diagnosed with a disease and the date that person's disease is reported to the health authority.

Risk Behavior: This is a behavior which increases the chance of contact with the infectious agent (HIV). These include all behaviors in which the exchange of body fluids occurs. For more discussion of HIV risk behaviors, read the Mode of Exposure entry above.

Sample: A subset of a population that is chosen for investigation.

Serosurveillance: Refers to a specialized tool of disease surveillance where data for a disease is collected through the results of tests conducted on blood samples drawn from a selected population.

Seroprevalence: The number of existing cases of a disease identified from antibody tests on blood serum taken from limited populations. The populations tested are limited but the information reflects actual rates, rather than estimates for this limited population.

Variable: A population characteristic that can be measured in various categories.

Year of Diagnosis: This is the year that the diagnosis of a disease condition is made. For AIDS cases, it is the year that the first AIDS-defining conditions occur. For HIV cases, it is the year of the first known positive HIV test.

Year of Report: The year in which an HIV or AIDS case is reported to the HIV/AIDS Surveillance Program. The US Centers for Disease Control and Prevention analyzes HIV and AIDS cases by the year of report.